

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Mentha x piperita*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(+)-ALPHA-PINENE	Leaf	14.0	145.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	(+)-ISOMINTLACTONE	Leaf	0.03	0.3		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	(+)-LIMONENE	Leaf	160.0	1590.0	-1.4142135623730956	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	(+)-PULEGONE	Leaf	0.0	440.0	-1.0016634166889522	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	(-)-LIMONENE	Leaf				Jim Duke's personal files.
0	(-)-LINALOOL	Leaf		5100.0	1.230534258357786	--
0	(-)-LINALYL-ACETATE	Leaf		3900.0	1.0	--
4	(-)-MENTHOL	Leaf	570.0	22800.0	1.2873367692180553	--
2	(-)-MENTHONE	Leaf	310.0	12400.0	1.4793055504316144	--
0	(-)-MINTLACTONE	Leaf	0.3	3.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	1,3-DIMETHYL-CYCLOHEXANONE	Essential Oil				--
0	1,4-DIMETHOXY-BENZENE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
67	1,8-CINEOLE	Leaf	45.0	3000.0	-0.14434750238417682	--
0	1-MENTHYL-BETA-D-GLUCOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	2,6-DIMETHYL-PYRIDINE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2-BUTYL-ISOVALERIC-ACID-METHYL-ESTER	Leaf	2.0	20.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-ETHYL-HEX-AN-1-OL	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-HYDROXY-BENZALDEHYDE	Leaf	0.003	0.03		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-METHYL-BUT-2-EN-1-AL	Leaf	0.007	0.07		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-METHYL-BUTYRIC-ACID-METHYL-ESTER	Leaf	0.004	0.04		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-METHYL-CINNAMALDEHYDE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-PHENYLETHANOL	Leaf	0.2	2.0	1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-PHENYLETHANOL-ACETATE	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-PHENYLETHANOL-BUTYRATE	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-PHENYLETHANOL-ISOBUTYRATE	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2-PHENYLETHANOL-N-VALERATE	Leaf	0.4	4.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	2-PROPYL-5-PHENYL-PYRIDINE	Leaf				--
0	3(5',5'-DIMETHYL-TETRAHYDROFURAN-2'-YL)-BUT-CIS-2-EN-1-OL	Essential Oil	1.15	2.26	-0.7068025178754254	--
0	3,4-DIMETHOXY-BENZALDEHYDE	Leaf	0.002	0.02		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	3,4-DIMETHOXY-SUDACHIUTIN	Leaf				--
0	3,4-DIMETHYL-PSEUDACHITIN	Leaf				--
0	3,4-DIMETHYL-SUDACHITIN	Leaf				--
0	3,6-DIMETHYL-6-OXO-OCTANOIC-ACID	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	3,6-DIMETHYL-7-OXO-OCTANOIC-ACID	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	3,6-DIMETHYL-7-OXO-OCTANOIC-ACID-ETHYL-ESTER	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	3-METHYL-CYCLOHEXANONE	Leaf	0.4	4.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	3-PHENYL-4-PROPYL-PYRIDINE	Leaf				--
0	3-PHENYL-PYRIDINE	Leaf				--
0	4-HYDROXY-4-METHYL-CYCLOHEX-2-EN-1-ONE	Leaf	0.07	0.7		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	4-METHYL-2-PHENYL-PENT-2-EN-1-AL	Leaf	0.006	0.06		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5,6-DIHYDROXY-3',4',7,8-TETRAMETHOXY-FLAVONE	Leaf				--
0	5-ETHYL-2-METHYL-PYRIDINE	Leaf				--
0	5-HYDROXY-3',4',6,7-TETRAMETHOXY-FLAVONE	Leaf				--
0	5-METHYL-2-(2'-OXO-3'-BUTYL)-PHENOL	Leaf	0.05	3.85		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5-METHYL-2-(3'-OXO-3'-PENTYL)-PHENOL	Leaf	0.01	0.04		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5-METHYL-2-PHENYL-HEX-2-EN-1-AL	Leaf	0.003	0.03		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5-METHYL-HEPTAN-3-ONE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5-O-DEMETHYL-NOBILETIN	Leaf				--
0	6-METHYL-HEPT-5-EN-2-ONE	Leaf	0.01	0.1	-1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	6-METHYL-JASMONATE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
6	ACETALDEHYDE	Plant				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
16	ACETIC-ACID	Plant				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
3	ALANINE	Leaf	1950.0	9135.0	-0.8050413111598015	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-AMORPHENE	Essential Oil				--
0	ALPHA-CADINENE	Essential Oil				--
7	ALPHA-CAROTENE	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
7	ALPHA-CAROTENE	Plant				--
0	ALPHA-COPAENE	Essential Oil				--
0	ALPHA-GURJUNENE	Essential Oil				--
28	ALPHA-PINENE	Leaf	5.0	230.0	-0.20961187746232532	--
13	ALPHA-TERPINENE	Plant		20.0	-0.471448810117065	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
23	ALPHA-TERPINEOL	Essential Oil				--
6	ALPHA-THUJONE	Essential Oil				--
32	ALPHA-TOCOPHEROL	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
32	ALPHA-TOCOPHEROL	Plant				--
5	ALUMINUM	Leaf	9.0	62.0	-0.714035286644626	--
1	AMYL-ALCOHOL	Plant				--
0	AMYL-VALERATE	Leaf	0.1	1.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
36	ANETHOLE	Leaf	0.001	0.01	-0.4885520732733946	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	ARGININE	Plant	1730.0	8105.0	-0.5964833395353818	USDA's Ag Handbook 8 and sequelae)
112	ASCORBIC-ACID	Leaf	30.0	201.0	-0.4252698582409893	--
0	ASH	Leaf	21009.0	141000.0	0.3902259909336596	--
3	ASPARTIC-ACID	Leaf	4430.0	20750.0	-0.3965260834123852	USDA's Ag Handbook 8 and sequelae)
10	AZULENE	Plant				Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
20	BENZOIC-ACID	Leaf	0.02	0.2	-1.0444099465857013	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
9	BENZYL-ALCOHOL	Leaf	0.01	0.1	-0.9218445129286937	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BENZYL-CYANIDE	Leaf	0.002	0.02		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BETA-BETULENOL	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
53	BETA-CAROTENE	Leaf	35.0	238.0	-0.10146187878336067	--
0	BETA-CARYOPHYLLENE	Leaf	8.0	80.0	-0.2956599615229847	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BETA-COPAENE	Essential Oil				--
13	BETA-IONONE	Leaf	0.3	3.0	-0.8660322478830228	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
13	BETA-PINENE	Leaf	10.0	400.0	0.16086697214271078	--
5	BETA-THUJONE	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-YLANGENE	Essential Oil				--
14	BETAINE	Leaf				--
0	BICYCLOELEMENE	Plant				Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	BISABOLENE	Essential Oil				Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	BOVOLIDE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BUTAN-2-ONE	Essential Oil	0.001	0.01		--
4	CADINENE	Essential Oil				--
102	CAFFEIC-ACID	Shoot				--
28	CALCIUM	Leaf	2414.0	16200.0	-0.15286128578990477	--
9	CAMPHENE	Leaf	2.0	25.0	-0.183243207929448	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CARBOHYDRATES	Leaf	82993.0	557000.0	-0.43619828700074176	--
37	CARVACROL	Essential Oil				--
1	CARVEOL	Essential Oil				--
0	CARVEOL-ACETATE	Essential Oil				--
19	CARVONE	Leaf	4.0	132.0	-0.2557908806749495	USDA's Ag Handbook 8 and sequelae)
8	CARYOPHYLLENE-OXIDE	Essential Oil				--
1	CEDRENE	Essential Oil				--
3	CEDROL	Essential Oil				--
77	CHLOROGENIC-ACID	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
20	CHOLINE	Plant				Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
24	CHROMIUM	Leaf				--
0	CINEOLE	Leaf	2.0	1200.0	-0.7253068172850167	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CINEROL	Essential Oil				--
0	CINNAMIC-ACID-METHYL-ESTER	Essential Oil				--
0	CIS-PIPERITOL	Leaf	0.5	5.0	-0.33738082371128875	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CIS-ROSE-OXIDE	Plant	0.03	0.3		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CIS-SABINOL	Leaf	0.001	0.01	-0.9999999999999999	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CITRONELLIC-ACID	Leaf	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
15	CITRONELLOL	Essential Oil				--
2	COBALT	Leaf	1.4	9.3	-0.24360871001374768	--
12	COPPER	Plant	3.0	15.0	0.10889562727041327	--
4	COSMOSIIN	Shoot				--
57	COUMARIN	Leaf	0.02	0.2	-0.9931104006289337	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

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0	CRYPTONE	Leaf	0.001	0.01	-0.2982453276081836	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
1	CUMIN-ALCOHOL	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CYCLOPENTANOL	Leaf	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	CYSTINE	Leaf	410.0	1920.0	-0.8393859041373689	USDA's Ag Handbook 8 and sequelae)
1	DELTA-DODECALACTONE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	DELTA-JASMINLACTONE	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	DIHYDRO-LIMONENE-10-OL	Essential Oil				--
0	DIHYDRO-TERPINEOL-ACETATE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	DIHYDROCARVONE	Leaf				--
1	DIMETHYL-SULFOXIDE	Essential Oil				--
4	DIOSPHENOL	Leaf	0.01	0.1	-1.414213562373095	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
7	DIPENTENE	Essential Oil				--
0	EO	Plant	1000.0	40000.0	2.2998004823343745	--
0	EO	Leaf	2980.0	30000.0	1.624175155531196	--
0	ERIODICTYOL-7-O-RUTINOSIDE	Leaf		860.0		--
76	EUGENOL	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	EUPATORIN	Essential Oil				--
0	FAT	Leaf	8046.0	54000.0	-0.049061951284346775	--
0	FENCHENE	Essential Oil				--
15	FIBER	Leaf	80000.0	370000.0	2.5779097637042825	--
0	FIBER(CRUDE)	Leaf		114000.0	-0.3493395715646385	--
0	FIBER(DIETARY)	Leaf		323000.0	-0.6193479291932424	--
0	FOLATE	Leaf	1.0	5.0	-0.50709255283711	--
3	GAMMA-DECALACTONE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GAMMA-JASMINLACTONE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
11	GAMMA-TERPINENE	Leaf	2.0	20.0	-0.3333608316460293	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
14	GAMMA-TOCOPHEROL	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
14	GAMMA-TOCOPHEROL	Plant				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GARDENIN-B	Leaf				--
1	GARDENIN-D	Leaf				--
13	GERANIAL	Leaf	0.005	0.05	-0.40622213468772406	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GERANIC-ACID	Leaf	0.01	0.1	-1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

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0	GERANIOL-ACETATE	Leaf	0.1	1.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	GERMACRENE-D	Plant	40.0	1600.0	0.9268193060783411	--
2	GERMACRENE-D	Essential Oil				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
8	GLUTAMIC-ACID	Leaf	4090.0	19155.0	-1.0148279814319057	USDA's Ag Handbook 8 and sequelae)
12	GLYCINE	Leaf	1800.0	8430.0	-0.5274517393414566	USDA's Ag Handbook 8 and sequelae)
18	GUAIACOL	Leaf	0.01	0.1	-0.9999999999999998	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	HEPTAN-2-ONE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	HEPTAN-3-OL	Leaf	0.5	5.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
8	HESPERETIN	Leaf				--
0	HEX-TRANS-2-ENOIC-ACID	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
7	HISTIDINE	Leaf	750.0	3515.0	-0.9341083079663628	USDA's Ag Handbook 8 and sequelae)
0	HYDROXY-BOVOLIDE	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	HYMENOXIN	Leaf				--
6	IRON	Leaf	9.0	60.0	-0.7684938892798674	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOAMYL-PHENYLACETATE	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	ISOBUTYRIC-ACID	Leaf	0.03	0.3		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	ISOCHLOROGENIC-ACID	Shoot				--
3	ISOLEUCINE	Leaf	1540.0	7215.0	-1.249160448308607	USDA's Ag Handbook 8 and sequelae)
1	ISOMENTHOL	Leaf	19.0	310.0		--
0	ISOMENTHOL-ACETATE	Leaf	8.0	80.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	ISOMENTHONE	Leaf	30.0	1000.0	-0.3512773577706616	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ISOMENTHYL-ACETATE	Plant		40.0		--
0	ISOPULEGOL-ACETATE	Leaf	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ISORHOIFOLIN	Leaf				--
1	ISOVALERALDEHYDE	Plant				--
5	ISOVALERIC-ACID	Plant				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	ISOVALERIC-ACID-N-OCTYL-ESTER	Leaf	0.005	0.05		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
8	JASMONE	Essential Oil				--
0	KILOCALORIES	Leaf	700.0	3280.0	0.42218860005660086	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LAVANDULOL	Leaf	0.001	0.01	-0.5763235266790874	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	LEDOL	Plant				Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
2	LEUCINE	Leaf	2810.0	13160.0	-0.5164603640137028	USDA's Ag Handbook 8 and sequelae)
60	LIMONENE	Leaf				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
60	LIMONENE	Leaf	2.0	320.0	-0.1111439982811531	--
0	LIMONENE-10-OL-ACETATE	Essential Oil				--
0	LINALOL	Leaf	12.0	120.0	-0.37152122337493615	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
53	LINALOOL	Leaf	12.0	120.0	-0.5643452828489668	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
27	LINOLEIC-ACID	Leaf	690.0	3230.0	-0.836657589234807	USDA's Ag Handbook 8 and sequelae)
0	LINOLENIC-ACID	Leaf	4350.0	20375.0	-0.25757849096892454	USDA's Ag Handbook 8 and sequelae)
3	LITHOSPERMIC-ACID	Shoot				--
78	LUTEOLIN	Leaf				--
0	LUTEOLIN-7-O-RUTINOSIDE	Leaf		120.0		--
4	LYSINE	Leaf	1610.0	7540.0	-1.2130018506666402	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Leaf	985.0	6610.0	0.9592560865006985	--
14	MANGANESE	Leaf	0.9	6.1	-0.449744887822011	--
0	MENTHACUBANONE	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	MENTHOCUBANONE	Shoot				--
5	MENTHOFURAN	Ay	0.0	2200.0		--
5	MENTHOFURAN	Plant	0.0	2800.0	-0.21169960706553295	--
0	MENTHOKUBANONE	Shoot				--
63	MENTHOL	Leaf	156.0	20000.0	1.712736280041748	--
30	MENTHONE	Plant	20.0	10000.0	1.1206421982612318	--
0	MENTHOSIDE	Leaf				--
2	MENTHYL-ACETATE	Leaf	8.0	5080.0	1.0	--
0	MENTHYL-ISOVALERATE	Leaf	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
1	MENTHYL-VALERATE	Leaf				--
15	METHIONINE	Leaf	530.0	2480.0	-0.5044307630520085	USDA's Ag Handbook 8 and sequelae)
0	MINTLACTONE	Leaf	0.3	3.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
13	MUFA	Leaf	330.0	1545.0	-0.5776850115332612	USDA's Ag Handbook 8 and sequelae)
22	MYRCENE	Leaf	1.0	10.0	-0.1690670199378623	--
6	MYRISTIC-ACID	Leaf	60.0	280.0	-0.5487621803585421	USDA's Ag Handbook 8 and sequelae)
5	MYRTENAL	Leaf	0.002	0.02	-0.6615846316788583	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	MYRTENOL	Leaf	0.5	5.0	-0.4111878513407326	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	NEO-ISOPULEGOL	Essential Oil				--
0	NEOISOMENTHOL-ACETATE	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	NEOMENTHOL	Leaf	33.0	820.0	-0.5511420219113455	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	NEOMENTHONE	Leaf	70.0	700.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	NEOMENTHYL-ACETATE	Leaf	15.0	150.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	NERAL	Leaf	0.001	0.01	-0.38676724089891473	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
10	NEROL	Tissue Culture				--
11	NEROLIDOL	Leaf	0.05	0.5	-0.720791838993579	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
6	NEVADENSIN	Leaf				--
39	NIACIN	Leaf	17.0	114.0	0.20068986644013934	--
0	NONAN-1-OL	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
6	O-CRESOL	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	OCIMENE	Essential Oil				--
0	OCT-TRANS-2-EN-OL	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	OCTAN-3-OL	Leaf	4.0	70.0	-0.44215414473573506	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
18	OLEIC-ACID	Leaf	290.0	1360.0	-0.4812366612025926	USDA's Ag Handbook 8 and sequelae)
25	P-COUMARIC-ACID	Shoot				--
8	P-CRESOL	Leaf	0.002	0.02		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
16	P-CYMENE	Leaf	2.5	30.0	-0.37518958392793345	--
0	P-CYMOL	Leaf	4.0	130.0	-0.49340535570543737	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	P-MENTH-TRANS-2-EN-1-OL	Essential Oil				--
0	P-MENTHANE	Essential Oil				--
0	P-METHOXY-ACETOPHENONE	Leaf	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
13	PALMITIC-ACID	Leaf	1760.0	8245.0	-0.2305670638390828	USDA's Ag Handbook 8 and sequelae)
2	PALMITOLEIC-ACID	Leaf	20.0	95.0	-0.5678932637249902	USDA's Ag Handbook 8 and sequelae)
11	PANTOTHENIC-ACID	Leaf	3.0	16.0	-0.5412275078515588	USDA's Ag Handbook 8 and sequelae)
24	PECTIN	Shoot		30000.0	-1.0	--
0	PENT-CIS-2-EN-1-OL	Leaf	0.5	5.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	PENTAL-1-OL	Essential Oil				--
0	PERILLYA-ALCOHOL	Leaf	0.05	0.5		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
14	PERILLYL-ALCOHOL	Leaf	0.05	0.5	-1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	PHELLANDRENE	Leaf	2.0	20.0	-0.7590978770025517	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PHENYLACETIC-ACID	Leaf	0.001	0.01	-0.9999999999999999	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
7	PHENYLALANINE	Leaf	1910.0	8945.0	-0.3435334143135559	USDA's Ag Handbook 8 and sequelae)
4	PHOSPHORUS	Leaf	1150.0	7720.0	0.5056965693142372	--
1	PHYTOL	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	PHYTOSTEROLS	Leaf	130.0	610.0	-0.6257204414433416	USDA's Ag Handbook 8 and sequelae)
12	PINENE	Leaf	2.0	23.0	-1.0108249650551153	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	PIPERITENONE	Essential Oil				--
7	PIPERITONE	Leaf	0.0	500.0	-0.09373547780090898	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	PIPERITONE-OXIDE	Plant				--
14	POTASSIUM	Leaf	3367.0	22600.0	-0.3419611238269452	--
0	PROLINE	Leaf	1540.0	7215.0	-0.5836536791989987	USDA's Ag Handbook 8 and sequelae)
0	PROTEIN	Plant		127000.0	-0.3807803570376024	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	PROTEIN	Leaf	36952.0	248000.0	0.3606805662486567	--
4	PUFA	Leaf	5080.0	23795.0	0.5812447226029958	USDA's Ag Handbook 8 and sequelae)
28	PULEGONE	Leaf	3.0	4000.0	-0.16632182702943415	--
3	PYRIDINE	Leaf	0.0	0.001		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
15	RIBOFLAVIN	Leaf	6.0	38.9	0.004481667283210983	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
57	ROSMARINIC-ACID	Shoot	700.0	1800.0	-0.771027454835924	--
57	ROSMARINIC-ACID	Plant		30000.0	0.09914512201035752	Fitoterapia No.62: 166.
87	RUTIN	Plant				Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
5	SABINENE	Essential Oil				--
0	SABINENE-ACETATE	Plant				--
0	SABINENE-HYDRATE	Leaf	5.0	110.0	-0.9948320067476139	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
7	SALICYLATES	Leaf		700.0	0.9464615674670505	--
0	SALVIGENIN	Essential Oil				--
60	SELENIUM	Leaf	0.2	1.1	-0.2980288183400826	--
1	SERINE	Leaf	1460.0	6840.0	-0.887454734220509	USDA's Ag Handbook 8 and sequelae)
0	SFA	Leaf	2460.0	11520.0	-0.127821093255717	USDA's Ag Handbook 8 and sequelae)
4	SIDERITOFILAVONE	Leaf				--
4	SILICON	Leaf				--
1	SODIUM	Leaf	291.0	1950.0	-0.30095148580568315	--
8	STEARIC-ACID	Leaf	250.0	1170.0	0.14050356783238777	--
35	TANNIN	Plant				--
0	TANNINS	Plant	60000.0	120000.0	-0.050903777361345805	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
23	TERPINEN-4-OL	Essential Oil				--
9	TERPINOLENE	Leaf				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
31	THIAMIN	Leaf		12.1	0.7909632587159201	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	THIAMINE	Leaf	2.0	12.1	1.6818266481789117	--
4	THREONINE	Leaf	1540.0	7215.0	-0.8631035461719366	USDA's Ag Handbook 8 and sequelae)
71	THYMOL	Essential Oil				--
4	TIN	Leaf	2.0	11.0	-0.5530067419183887	--
2	TRANS-BETA-FARNESENE	Essential Oil				--
0	TRANS-PIPERITOL	Leaf	0.5	5.0	-0.5608284179543459	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	TRANS-ROSE-OXIDE	Plant	0.01	0.1		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
29	TRYPTOPHAN	Leaf	580.0	2715.0	-0.29998211418836496	USDA's Ag Handbook 8 and sequelae)
8	TYROSINE	Leaf	1130.0	5295.0	-0.7531896889832713	USDA's Ag Handbook 8 and sequelae)
3	VALINE	Leaf	1870.0	8760.0	-1.1025941184400472	USDA's Ag Handbook 8 and sequelae)
28	VANILLIN	Leaf	0.001	0.01		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
1	VIRIDIFLOROL	Leaf	1.0	15.0	-0.6497303988183931	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	VITAMIN-B-6	Leaf	1.3	6.0		--
0	WATER	Leaf		851000.0	0.21633383145045382	--
3	XANTHOMICROL	Leaf				--
77	ZINC	Leaf				--